Structure RF Meeting – 8/3/04

- 1) Linear collider workshop @Victoria (Harry & Nikolay)
- 2) FXD-002 and FXD-003 tuning results (Timer)
- 3) Fabrication Schedule (Tug)
- 4) HOM measurements in FXC-001 [First results] (Gennady)
- 5) FXE Couplers Design, SiC business (Timer, Ivan et all.)
- 6) AOB

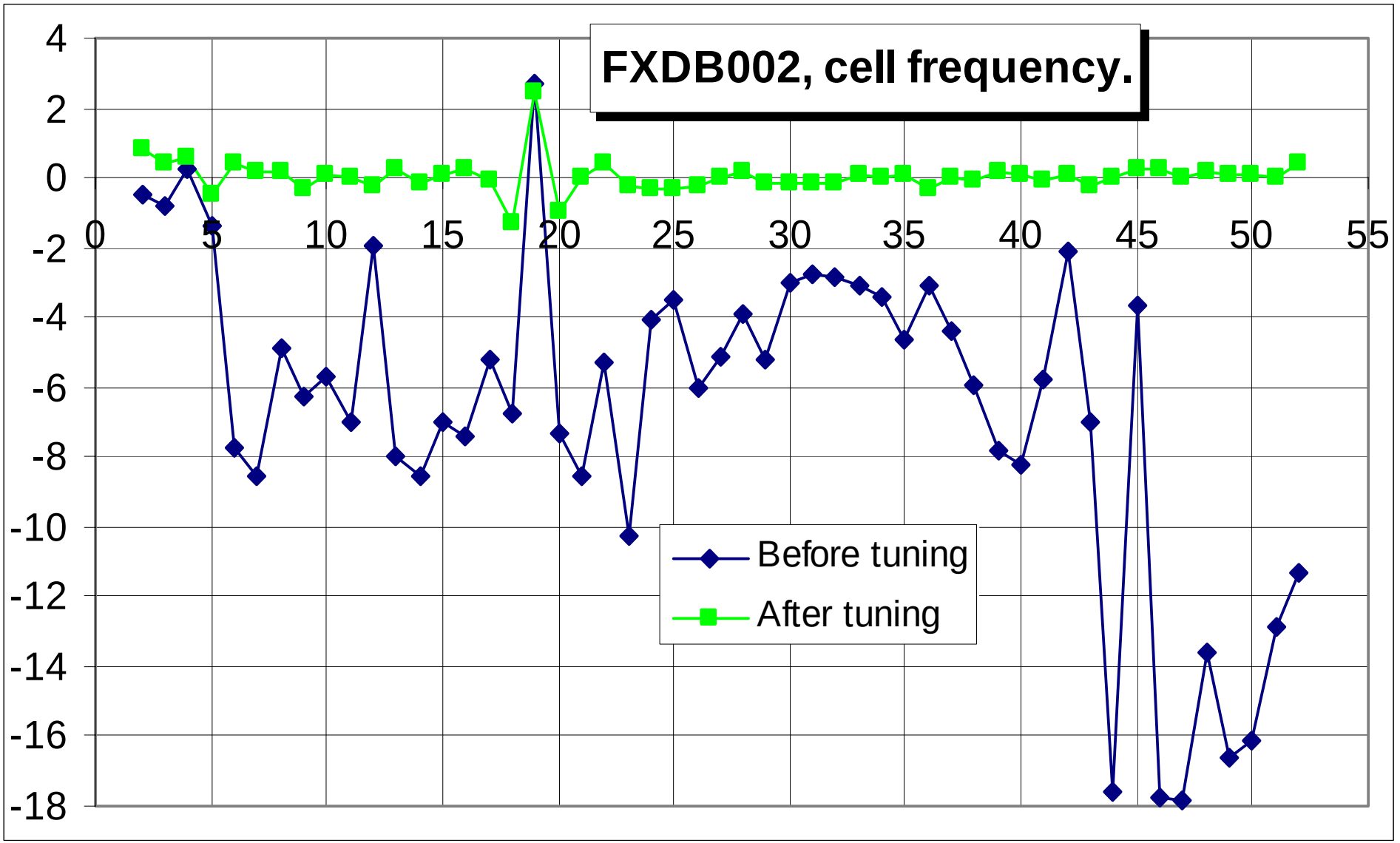
Agenda item #1

- Harry and Nikolay reported about the linear collider workshop held in Victoria. The meeting was focusing mostly on the detectors. There were sessions about accelerator structures where Harry gave a talk. There was a session about Engineering Test Facility (ETF). The need of ETF was discussed. It was stated that an ETF is crucial independent of the technology decision (cold or warm) but it is more critical for a warm linear collider to have at ETF. ETF will be a mechanical system integration proof of principle. It should be a bigger system than NLCTA but the 1% model will depend on the physics need, it could be less than that for a mechanical system integration proof of principle. Nikolay told about ITRP chair's talk at the workshop. The recommendation will be based on a decision matrix and it is expected to be released after the final ITRP meeting at Korea in August 2004.

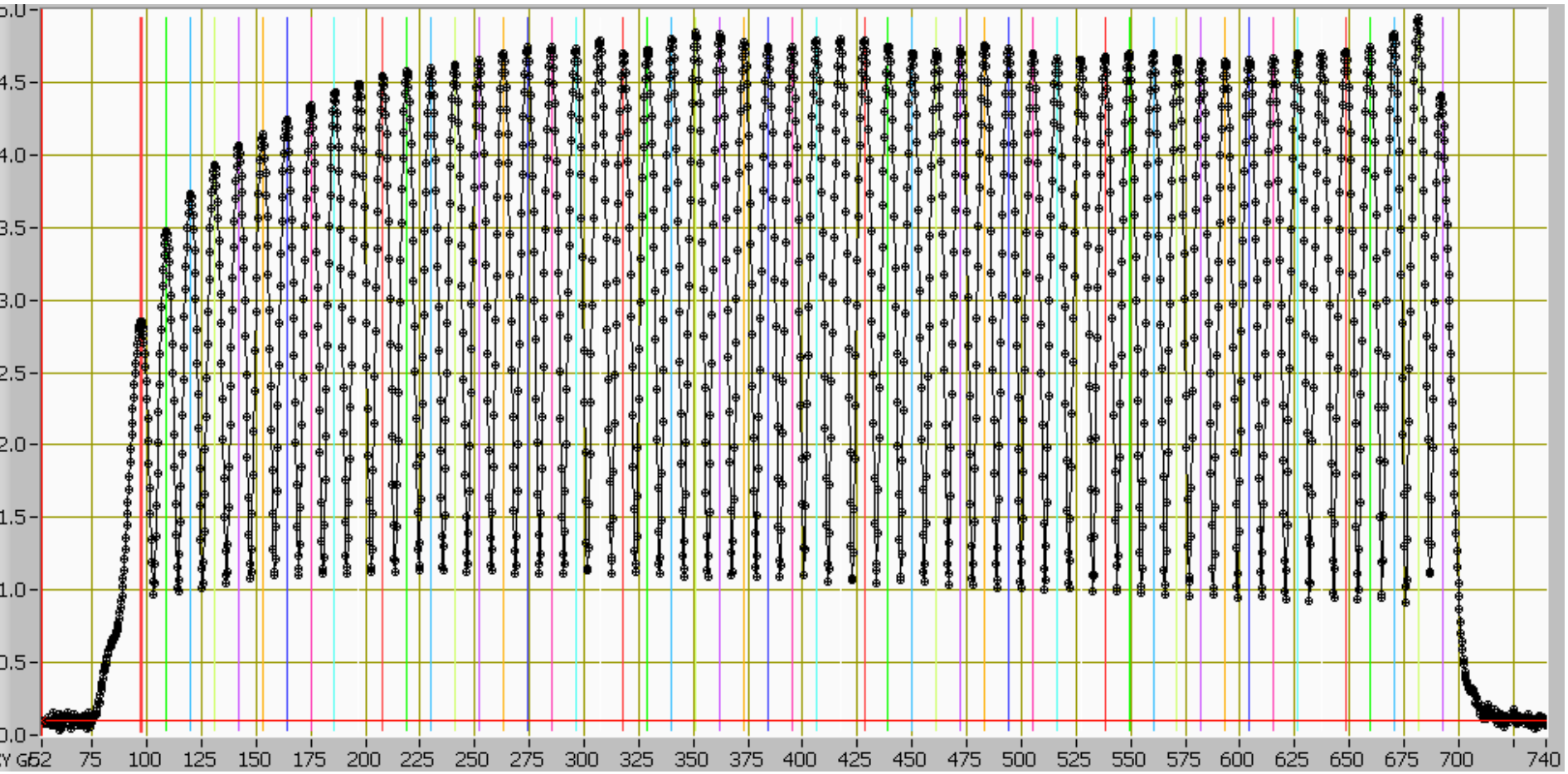
Agenda item #2

- FXD-002 and FXD-003 tuning results (Timer)

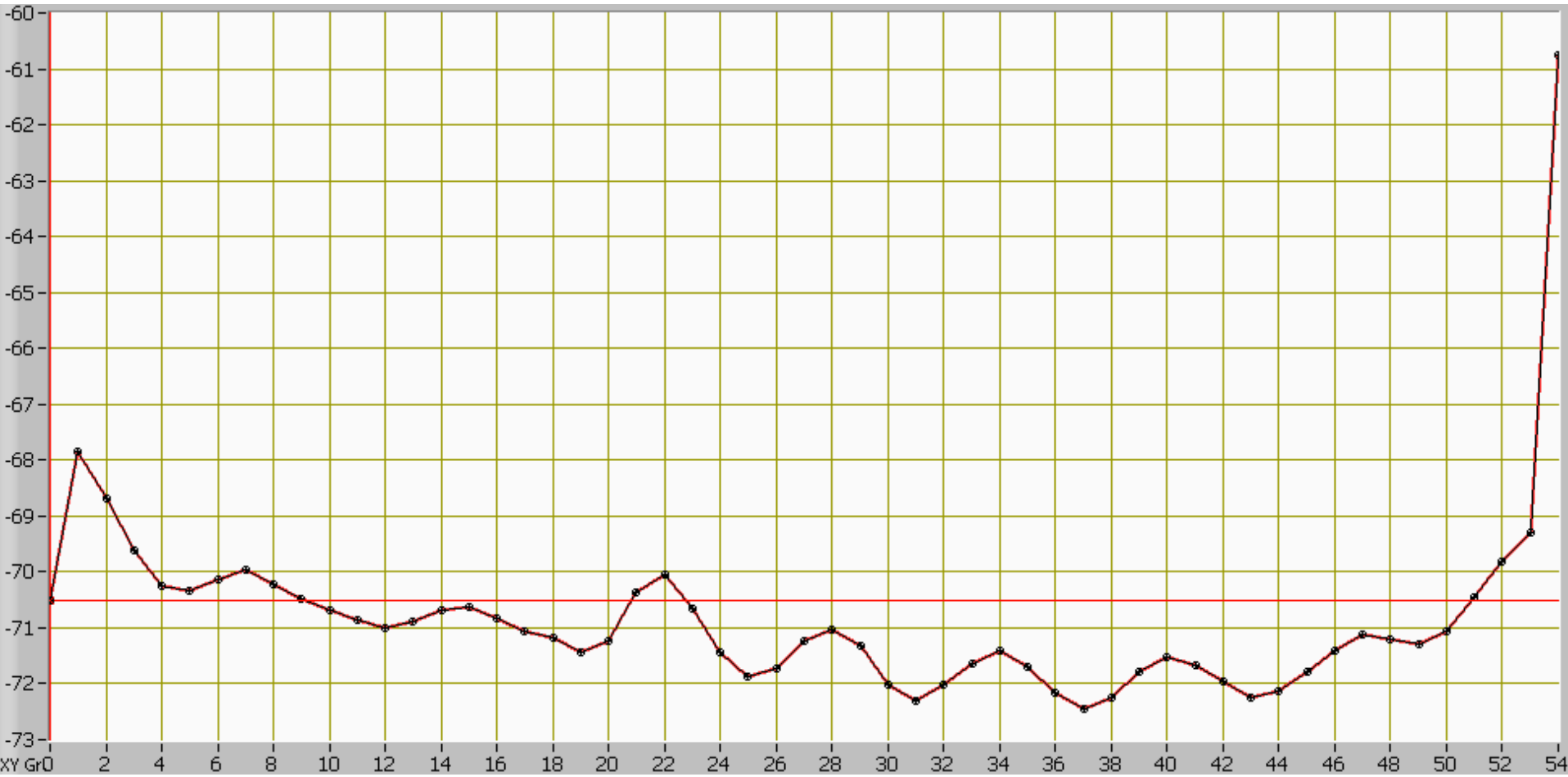
FXDB002. Cell frequency before and after tuning.



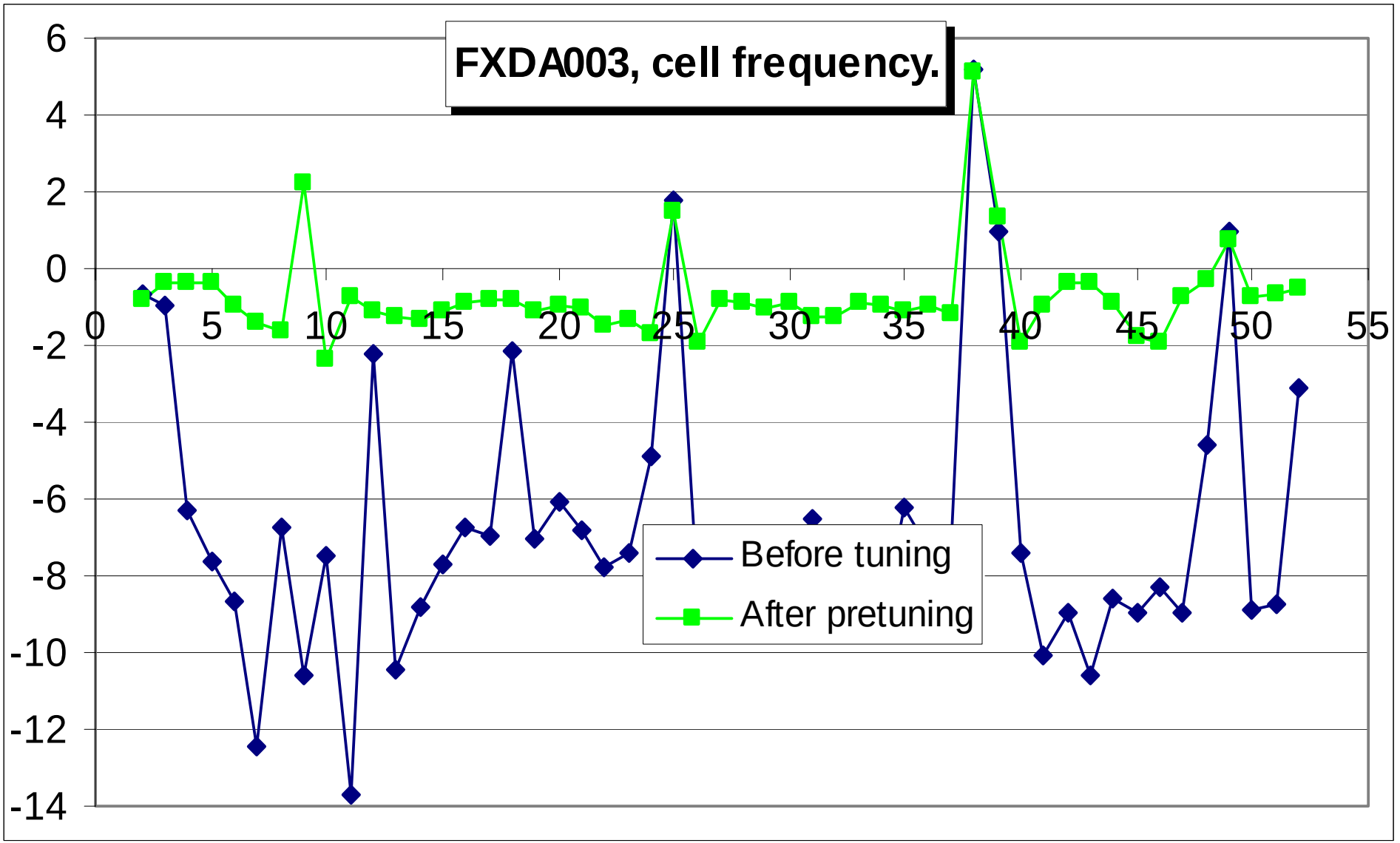
FXDB002. Amplitude after tuning.



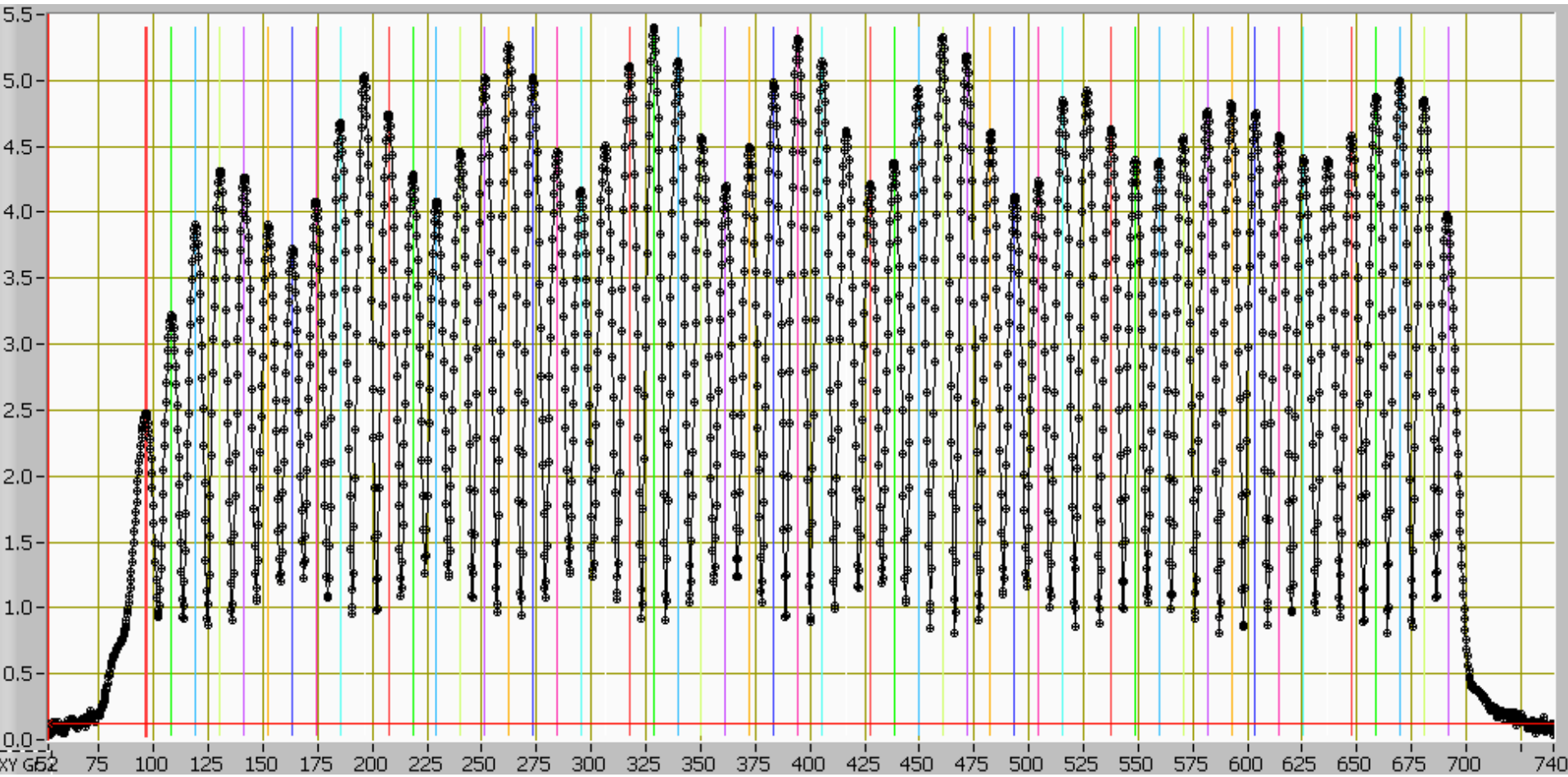
FXDB002. Phase after tuning.



FXDA003. Cell frequency before and after pretuning.



FXDA003. Amplitude after pretuning.



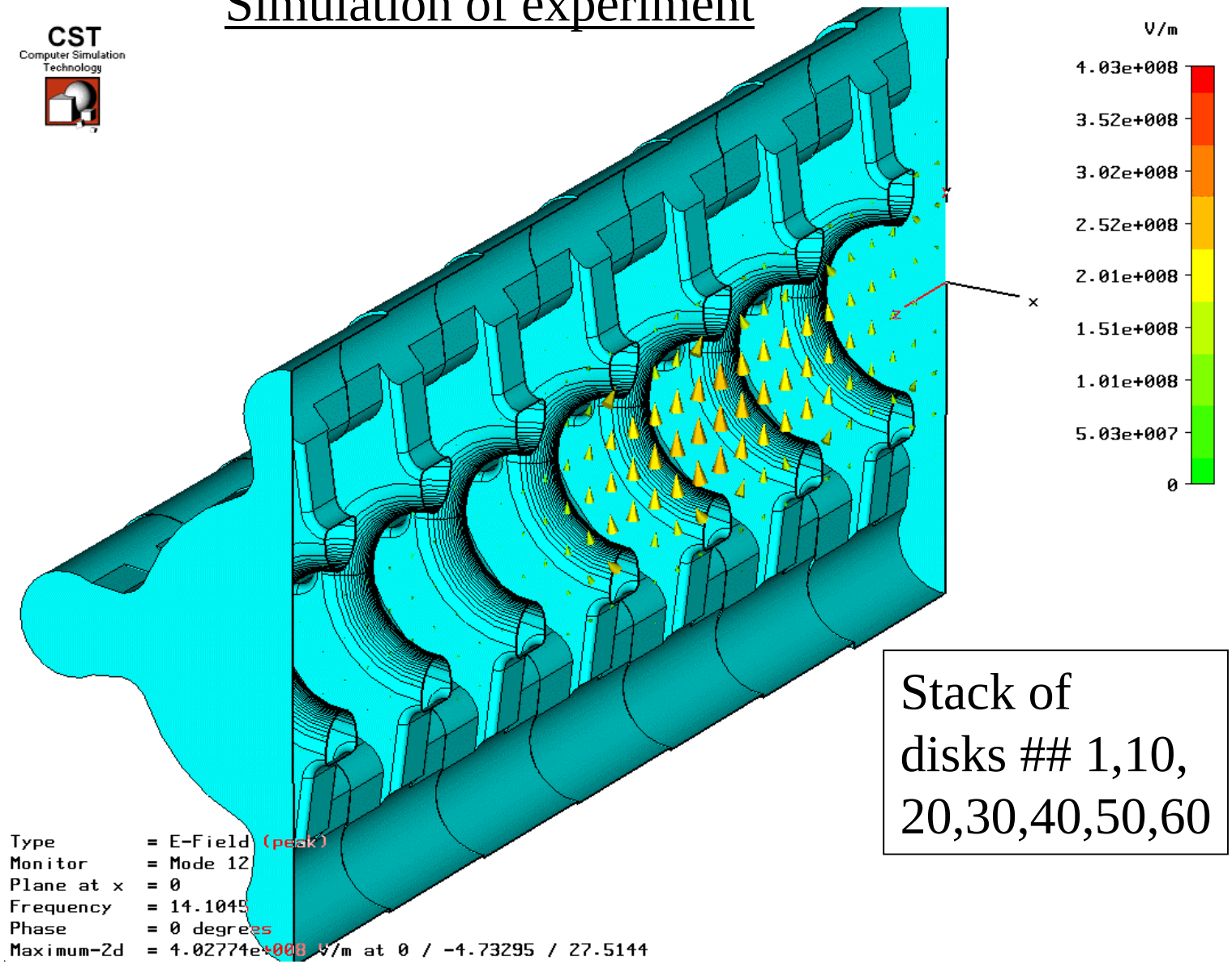
Agenda item#3

8/2 Monday:
-Seal and backfill FXD-A-003. Take it to IB4 machine shop for tuning hole modification.
-Check the status of the FXD-B-004 couplers at HighRise Machine shop.
-Vacuum baking of FXD-B-002 continues in the large furnace
-Clean the last set of FXE disks
8/3 Tuesday:
-Receive FXD-B-004 couplers from HighRise machine shop.
-Clean, assemble and braze RF flanges to the FXD-B-004 couplers (small furnace)
-Vacuum baking of FXD-B-002 will finish in the evening
8/4 Wednesday:
-When it is cool, take FXD-B-002 out of the large vacuum furnace with immediate nitrogen flow, seal the structure.
-Install FXD-B-002 on the Strongback and crate it for shipment to SLAC.
-Etch FXD-B-004 standard disks at MDL
-1000C bake FXD-B-004 disks in the large furnace
-Leak check FXD-B-004 coupler sub-assemblies, if they are leak tight, proceed:
-Braze FXD-B-004 output coupler to the matching disk (Small furnace)
8/5 Thursday:
-Stack and braze FXD-B-004 disk stack (large furnace)
-Leak check FXD-B-004 output coupler sub-assembly with the matching disk, if it is leak tight proceed:
-Give the coupler to Gennady for RF QC
-Braze FXD-B-004 input coupler to matching disk (Small furnace)
8/6 Friday:
-Leak check FXD-B-004 input coupler sub-assembly with the matching disk, if it is leak tight proceed:
-Wire wrap FXD-B-004 disk stack
-Assemble and braze couplers to the FXD-B-004 disk stack (large furnace)
-Leak check FXD-A-003 after tuning hole modification
8/7 Saturday:
-Setup and braze tuning pins to FXD-A-003 problem disks (large furnace)
-Store FXD-B-004 in the dessicator for tuning until Monday, 8/9

Agenda item #4

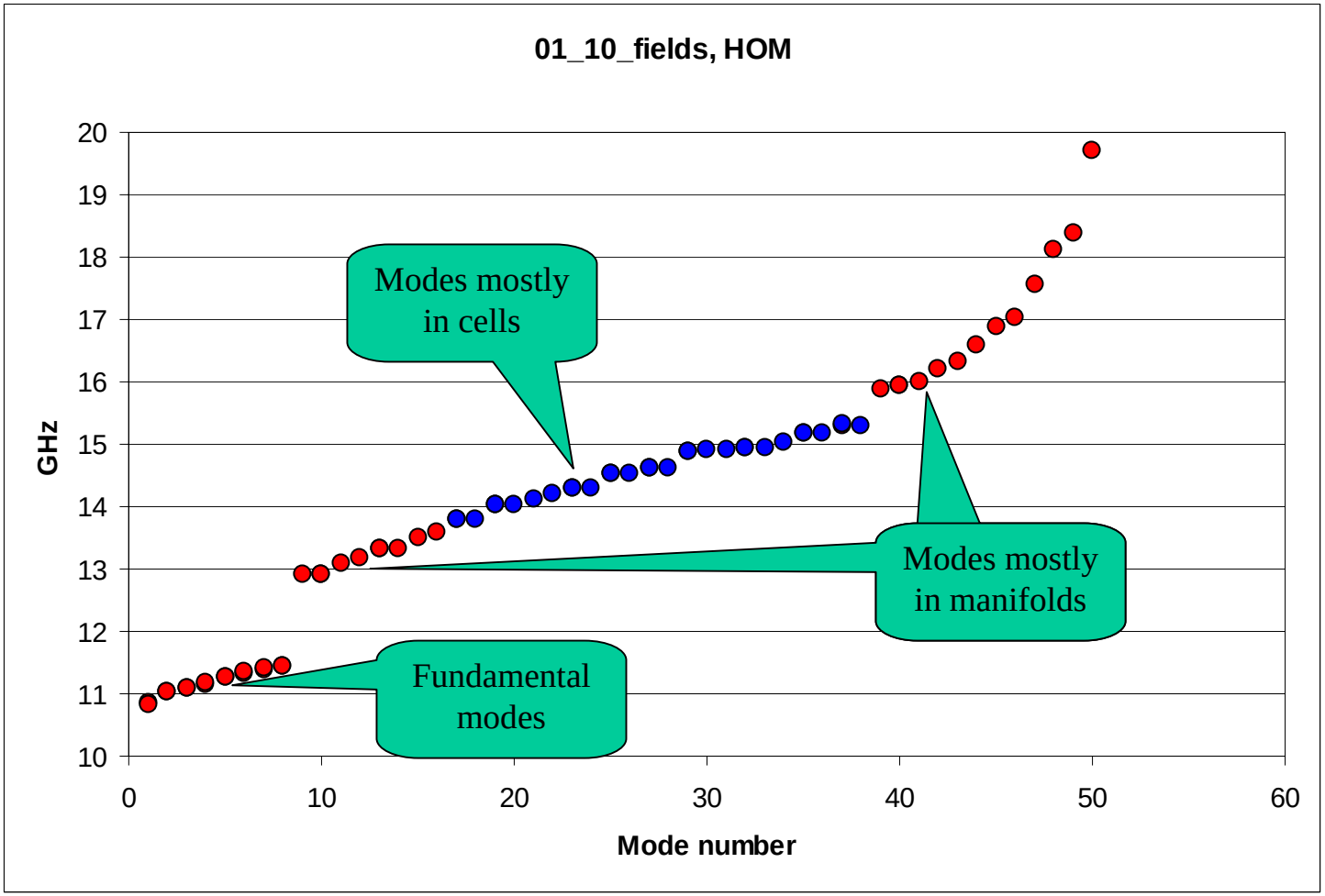
- HOM measurements in FXC-001 [First results] (Gennady)

Simulation of experiment

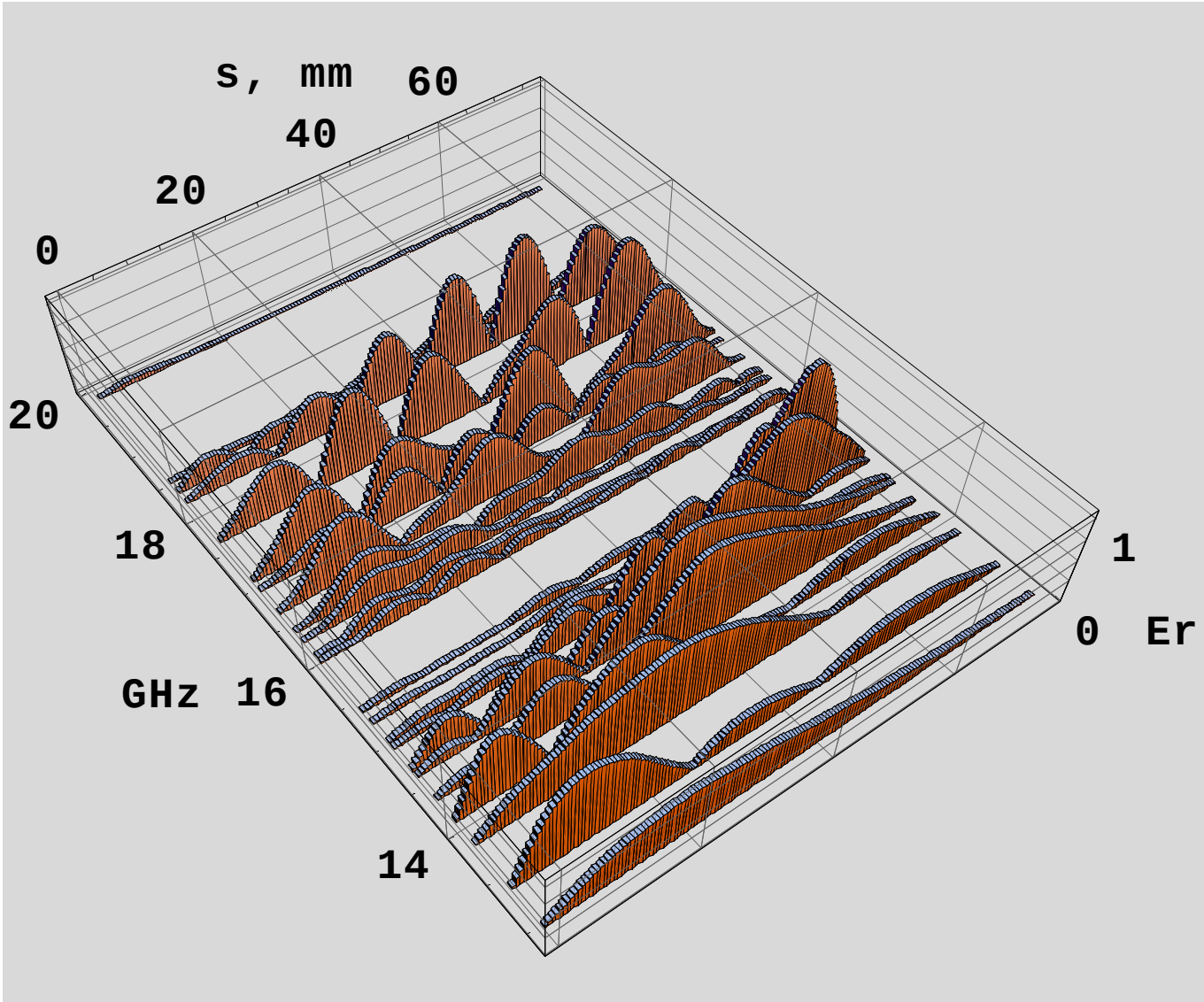


Stack of disks ## 1,10, 20,30,40,50,60

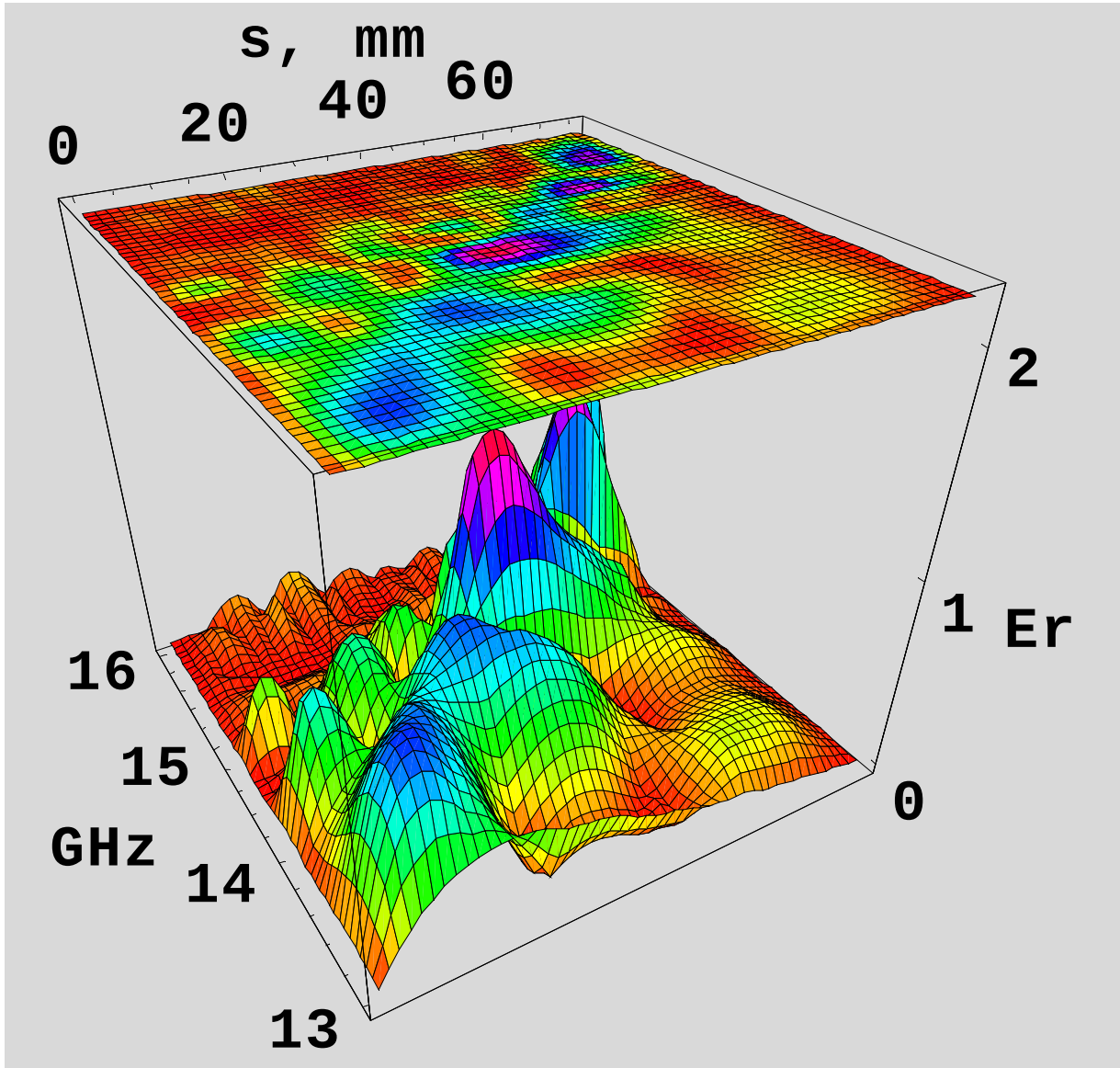
Simulated modes in 7-disk stack



Field distributions Ey of HOM in 7 disk stack

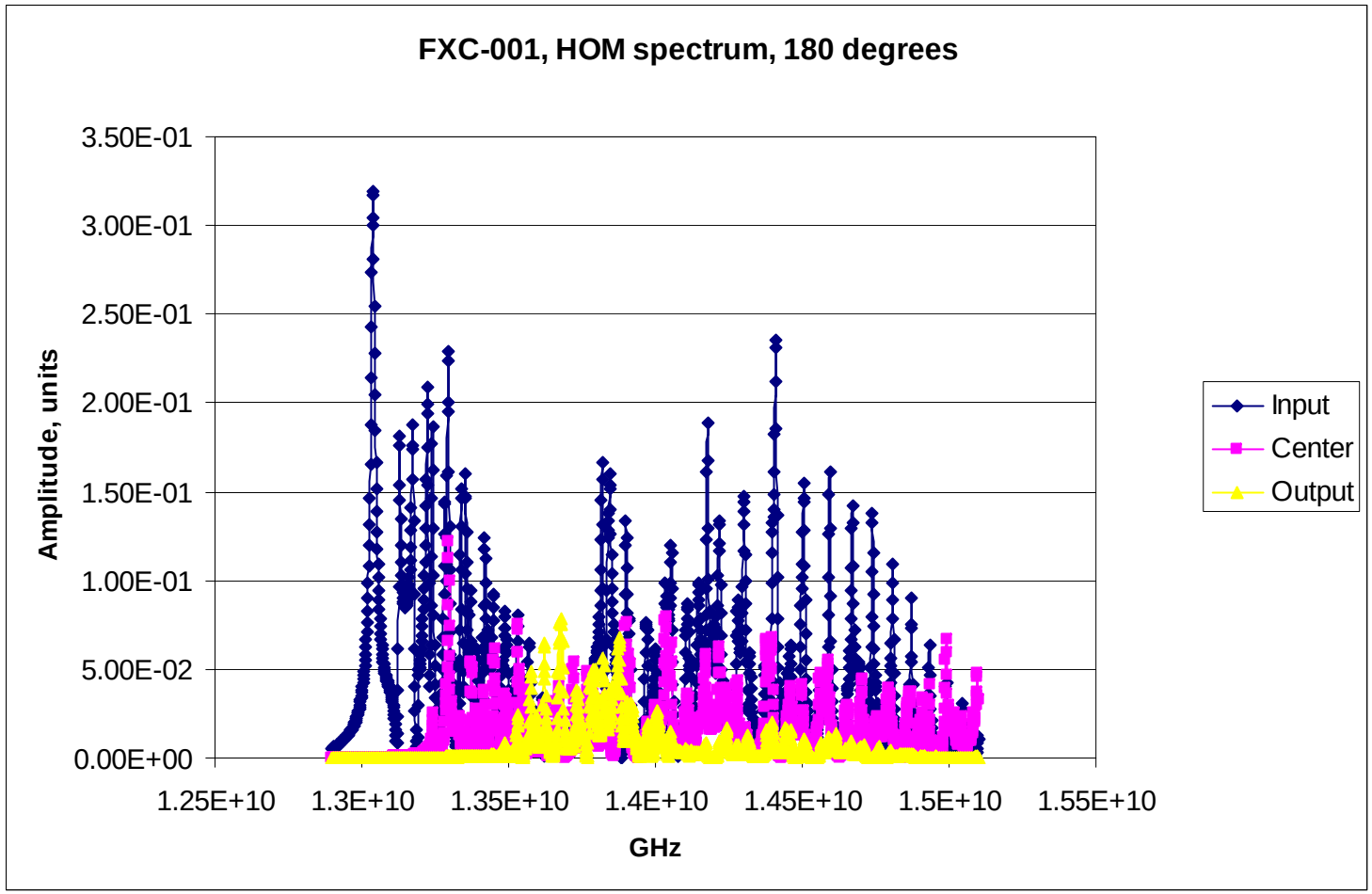


HOM locations in 7 disk stack

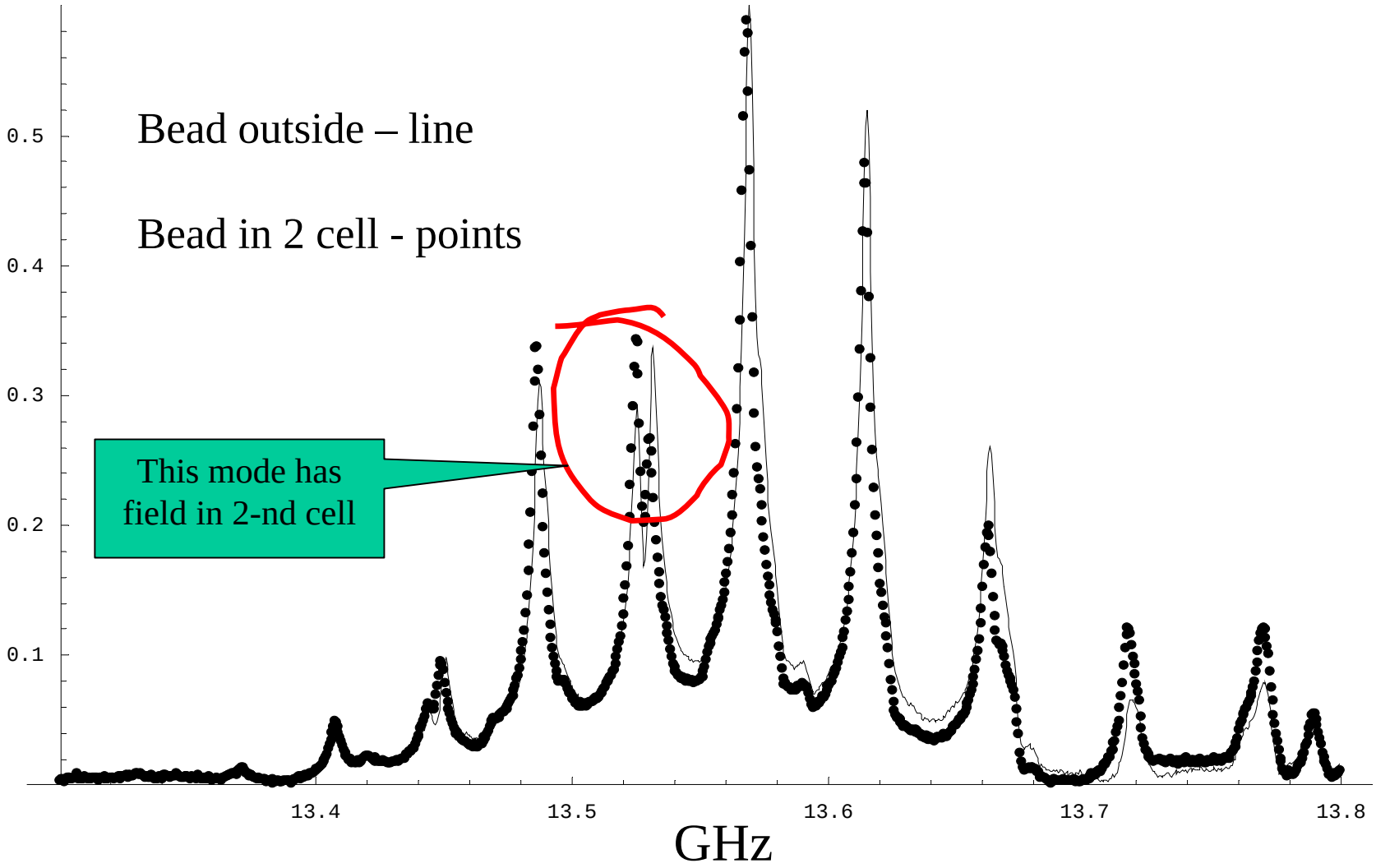


HOM spectra in FXC-001, loops in different ports.

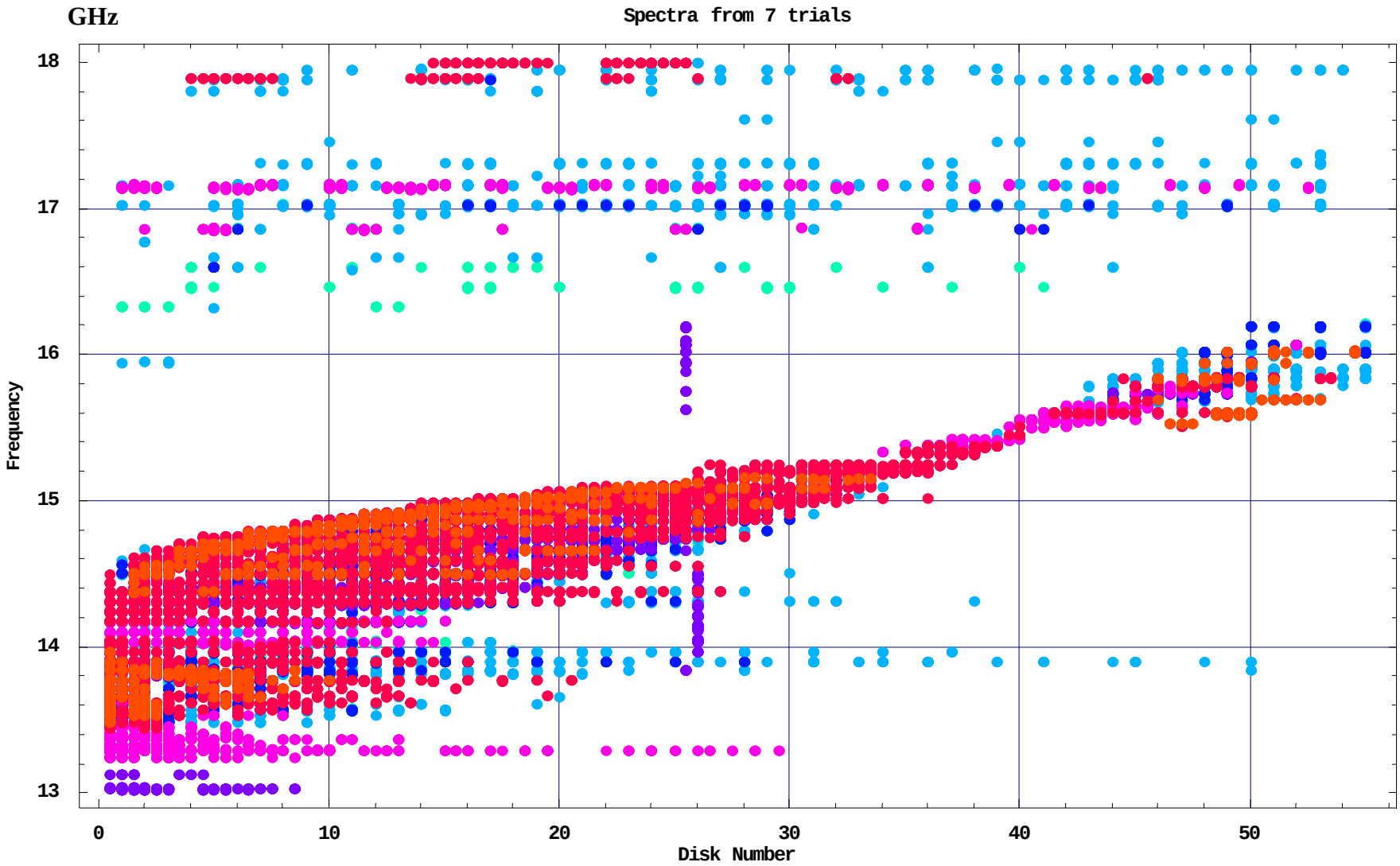
Ports are the holes drilled in HOM manifolds.



We measure full frequency spectra with bead placed in a cell.
Then we compare the spectra and obtain information on HOM location



HOM locations in FXC-001

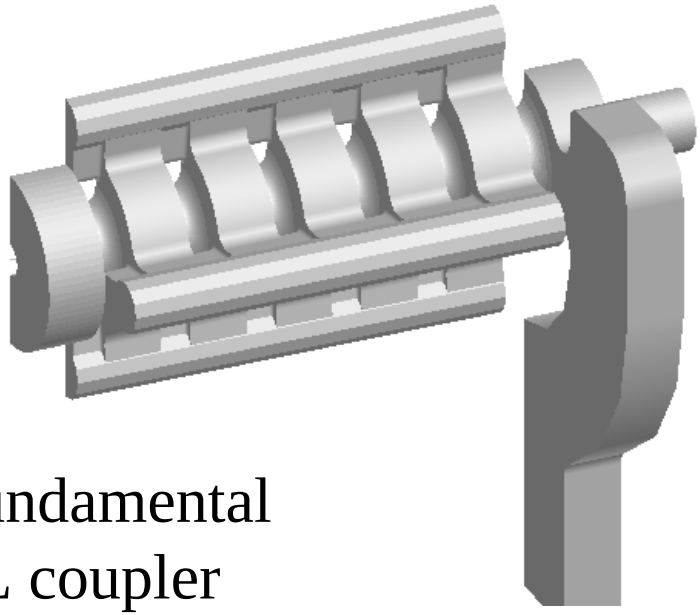


Preliminary conclusion

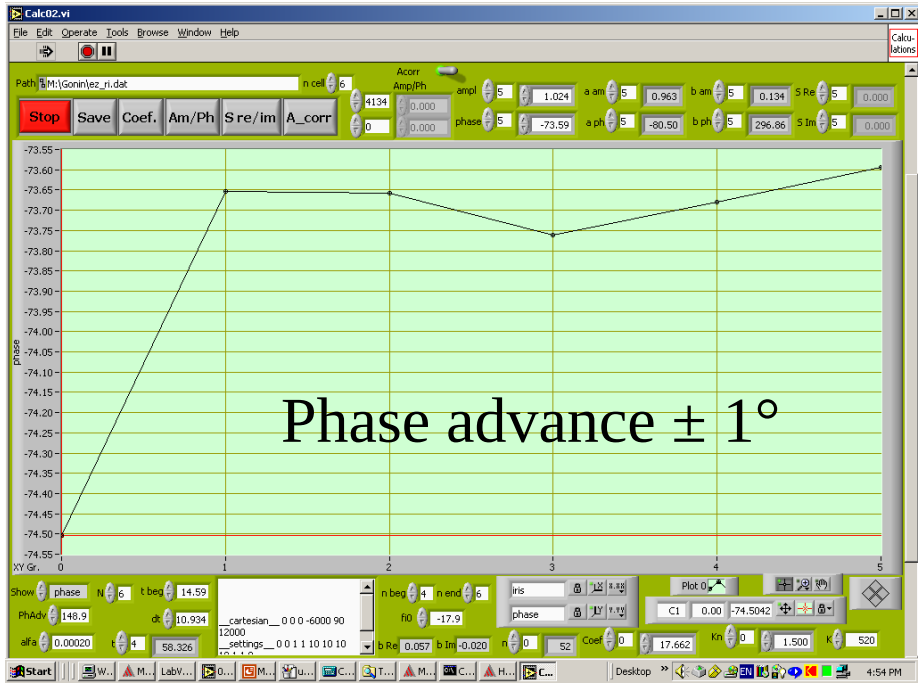
- This is first experimental data on HOM in complete NLC-style X-band structure
- We are going to conduct classical bead-pull measurements to verify and supplement spectral ones
- Finally we plan to develop a procedure based on this approach and accurate enough to get an additional control over disk and structure production.

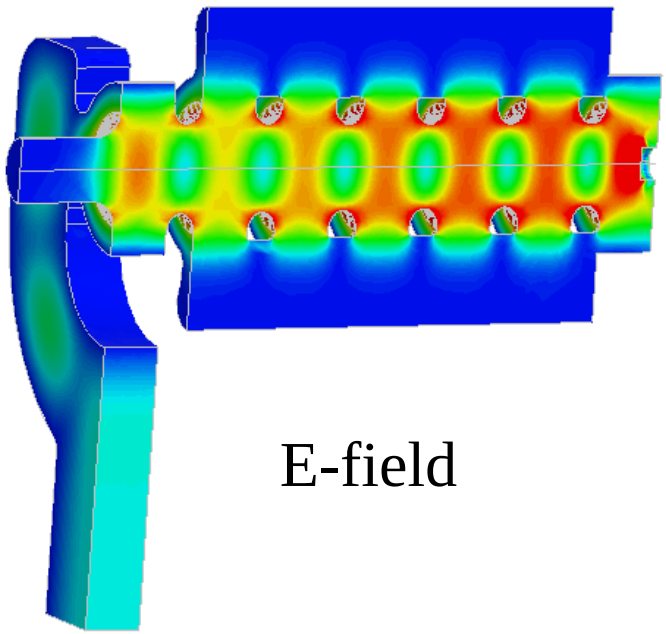
Agenda item #5

- FXE Couplers Design, SiC business (Timer, Ivan et all.)

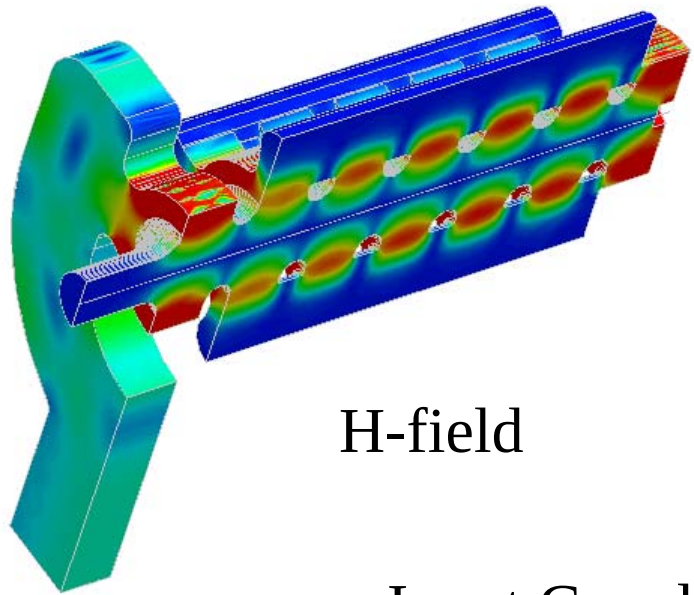


Fundamental
FL coupler



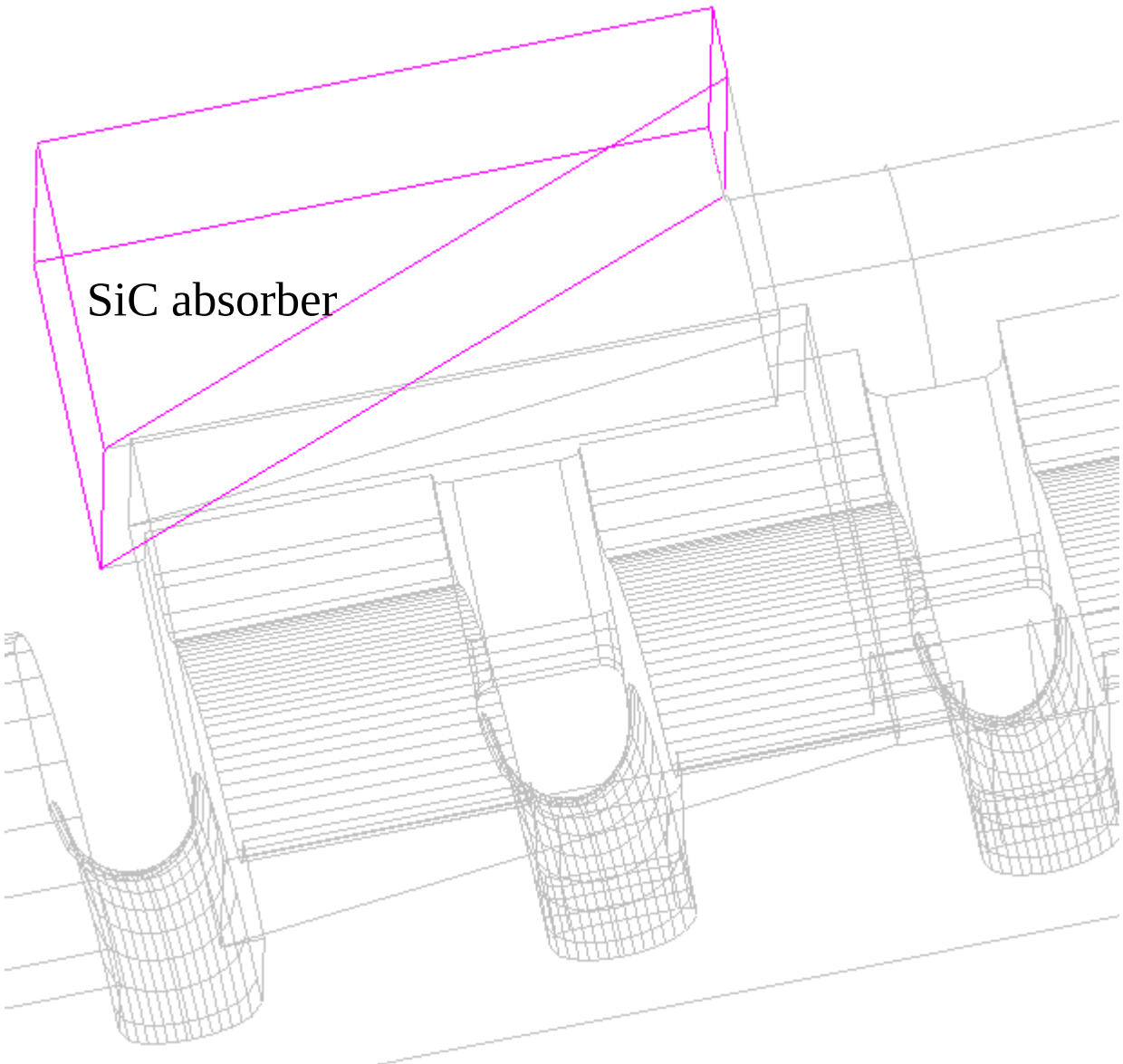


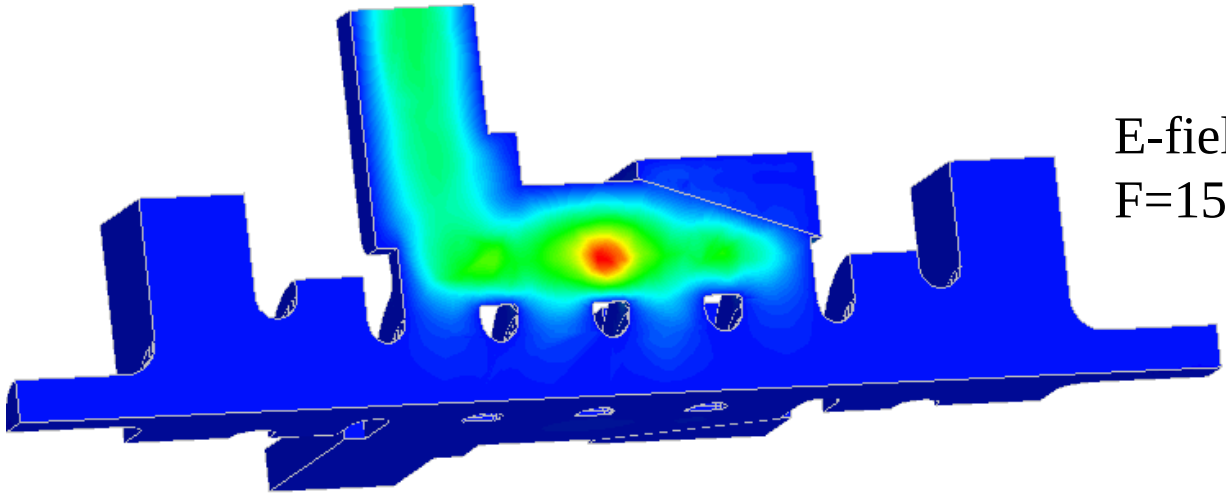
E-field



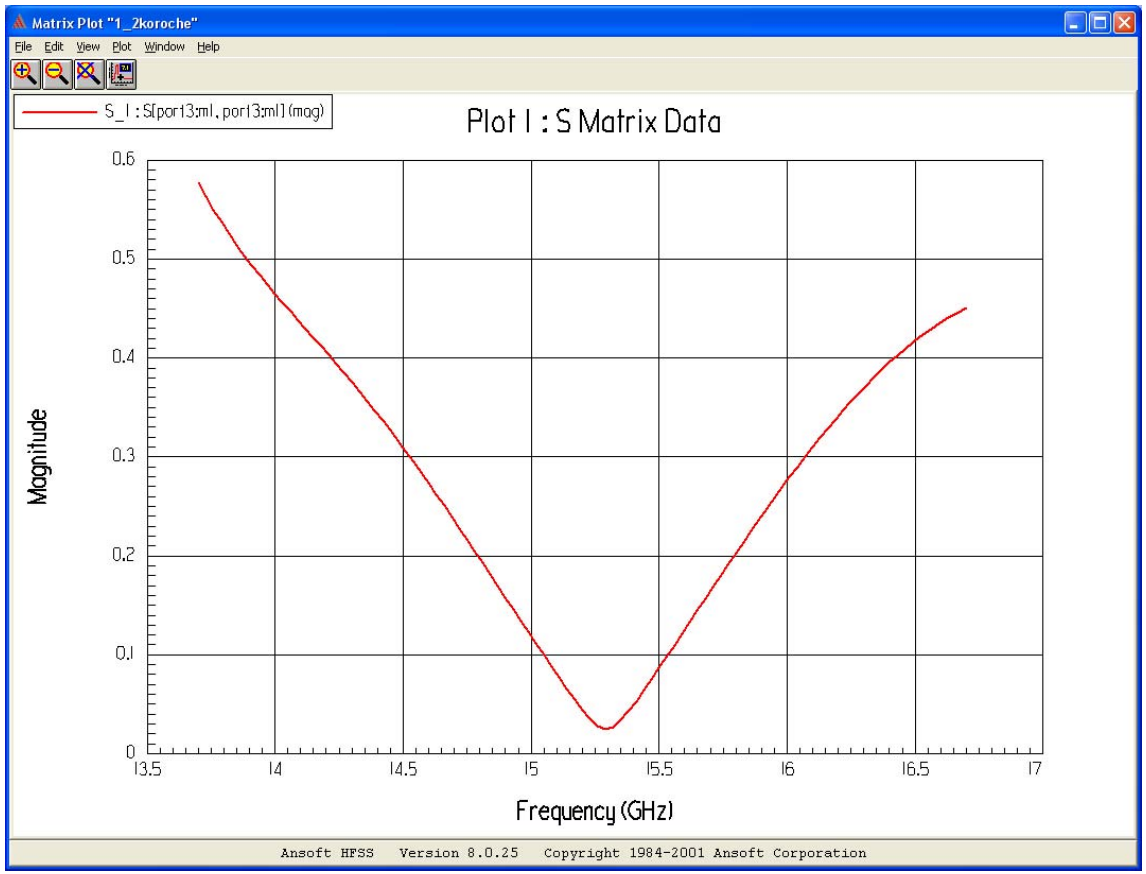
H-field

Input Coupler


SiC absorber



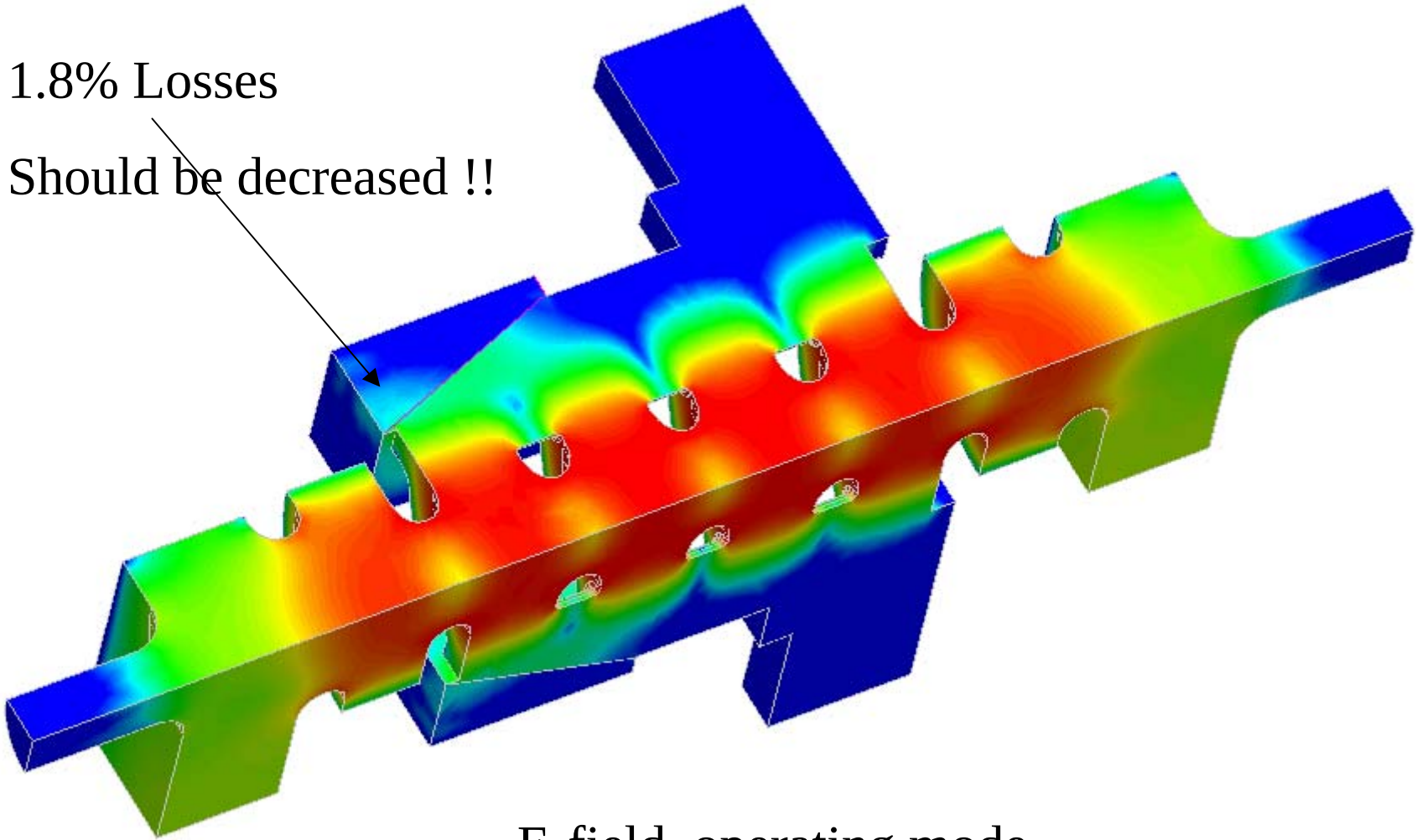
E-field,
F=15.2GHz



S11 vs Frequency

1.8% Losses

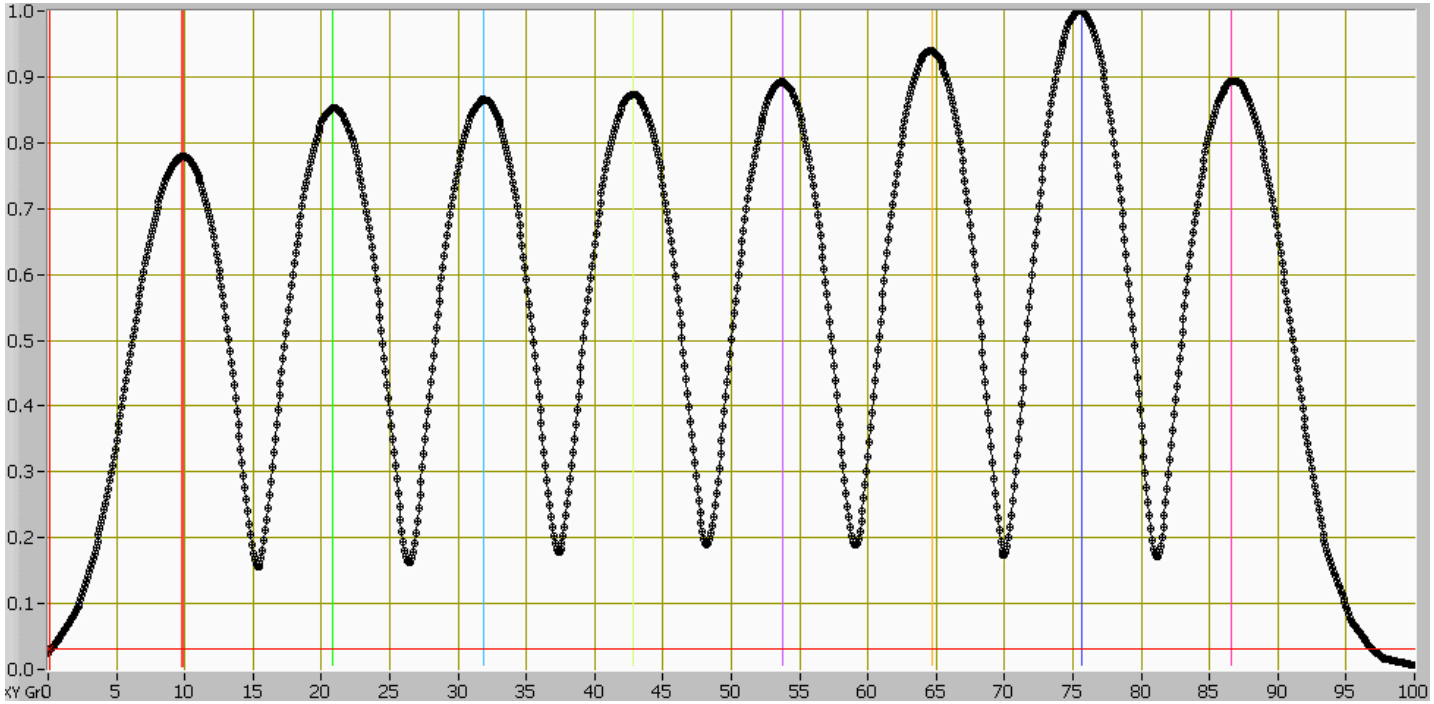
Should be decreased !!



E-field, operating mode

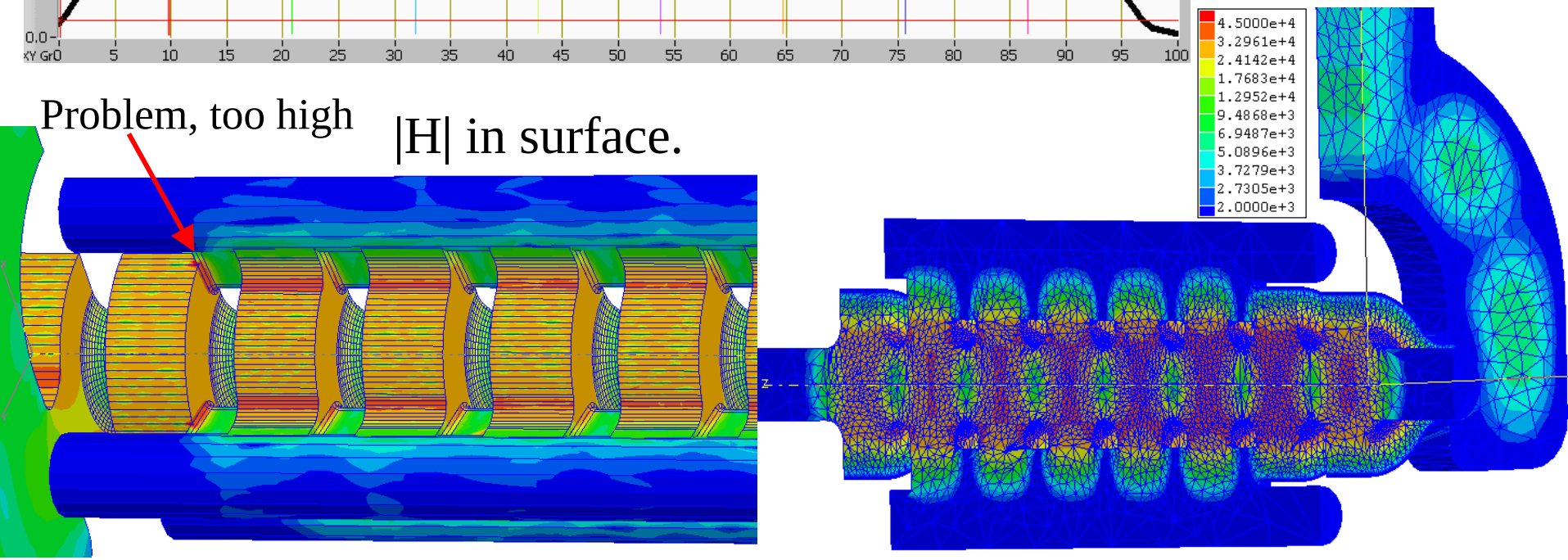
Design with key-hole in second iris.

Output Coupler



Problem, too high

|H| in surface.



Design without key-hole in second iris.